We reexamine a neutrino-driven r-process mechanism in the He shell of a core-collapse supernova with low initial metallicity. We use the hydrodynamic code KEPLER to calculate the nucleosynthesis both before and after the passage of shock, in recent pre-supernova models. We find that for an inverted neutrino mass hierarchy, $A \sim 130$ and 195 abundance peaks can be produced over $\sim$ 50–60 s for initial metallicities $\leq 10^{-3}$ the solar value. The mechanism is sensitive to the neutrino emission model and oscillations. We discuss the implications of this early r-process which could alter interpretations of abundance data from metal-poor stars.